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FLORIDA

PROGRESS REPORT: CHEMICAL CONTAMINANTS STUDY

OF THE

WITHLACOOCHEE/UPPER SUWANNEE RIVER SYSTEMS

HAMILTON AND SUWANNEE COUNTIES, FLORIDA

RECONNAISSANCE FIELD EVALUATION

PUBLICATION NO. PCFO-EC 92-02

U.S. FISH AND WILDLIFE SERVICE
DIVISION OF ENVIRONMENTAL CONTAMINANTS
PANAMA CITY FIELD OFFICE
PANAMA CITY, FLORIDA 32405

MICHAEL S. BRIM
ENVIRONMENTAL CONTAMINANTS SPECIALIST

DIANE BATEMAN
ASSISTANT ENVIRONMENTAL CONTAMINANTS SPECIALIST

ROBERT JARVIS
ENVIRONMENTAL CONTAMINANTS BIOLOGICAL AIDE

GAIL A. CARMODY, PROJECT LEADER
PANAMA CITY FIELD OFFICE

1992

U.S. FISH AND WILDLIFE SERVICE / SOUTHEAST REGION / ATLANTA, GEORGIA

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Michael S. Brim
Environmental Contaminants Specialist

Diane H. Bateman
Assistant Environmental Contaminants Specialist

Robert B. Jarvis
Environmental Contaminants Biological Aid

UNDER SUPERVISION OF:

Gail A. Carmody, Project Leader
Panama City Field Office

November 13, 1992

INTRODUCTION

The 9,900 square mile Suwannee River Basin is one of the last free flowing major river systems in the southeastern United States. There are no dams or significant flood control systems within the Basin. In addition, of the 300 major Florida springs, about 100 occur beside or within the channels of the Suwannee River or its main tributaries (Carr, 1983; Florida Department of Natural Resources, 1977). The headwaters flow out of the 675 square mile Okefenokee Swamp which lies mostly in Georgia. Three other major water sources are the Alapaha, Withlacoochee and Santa Fe rivers.

Trust resources are abundant in the Suwannee River Basin. Federally listed species utilizing the Basin include the endangered bald eagle (*Haliaeetus leucocephalus*), threatened eastern indigo snake (*Drymarchon corais couperi*), endangered red-cockaded woodpecker (*Picoides borealis*), endangered wood stork (*Mycteria americana*) and threatened Gulf sturgeon (*Acipenser oxyrhynchus desotoi*). The Basin provides habitat for dozens of species of migratory birds. At least a dozen breeding sites for wading birds and their allies have also been documented (U.S. Fish and Wildlife Service, 1982). Species include great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), tri-colored heron (*Egretta tricolor*), black-crowned night heron (*Nycticorax nycticorax*), common egret (*Casmerodius albus*), snowy egret (*Egretta thula*), cattle egret (*Bubulcus ibis*), white ibis (*Eudocimus albus*), anhinga (*Anhinga anhinga*), double-crested cormorant (*Phalacrocorax auritus*), and brown pelican (*Pelecanus occidentalis*). Wetlands associated with the basin are extensive; in total, tens of thousands of acres.

The Service became involved in the Withlacoochee/Upper Suwannee River project for several reasons. First, trust resources (such as those mentioned above) utilize the habitats within the project area. Second, in 1985, the Panama City Field Office began a generic study of the impacts of paper mills upon aquatic and wildlife habitats. As part of that study, in 1989 we reviewed and evaluated National Pollutant Discharge Elimination System (NPDES) Permit No. 89-FL041, that allowed continuation of the industrial discharge from the Nekoosa Packaging Company, a paper mill located in Lowndes County, Georgia. The Withlacoochee River receives approximately 26 million gallons per day of industrial effluent from the Nekoosa facility, via the tributary Jumping Gully Creek. Third, the Sierra Club requested an evaluation of this area by the Service because Jumping Gully Creek was being evaluated for a change in State water classification. The proposed change was to upgrade the creek from a Class V water body to a Class III.

The Withlacoochee River has its own unique resources. The river has steep banks with a largely undeveloped shoreline. Several spring-run streams flow into the river, and several aquatic caves occur in the river as well. Spring-run streams and aquatic

caves are fragile and their biological communities may be easily disturbed. The Florida Committee on Rare and Endangered Plants and Animals (FCREPA) lists the Jackson vine (*Smilax smallii*) as threatened and the spoon-flower (*Peltandra sagittifolia*) as rare. Both plant species may grow along the banks of the Withlacoochee River (Florida Department of Natural Resources [FDNR], 1989). The Suwannee bass (*Micropterus notius*), a Species of Special Concern to the State of Florida, has been caught in the Withlacoochee River, as well the spotted bullhead (*Ictalurus serracanthus*) and bannerfin shiner (*Notropis leedsi*), species listed as rare by FCREPA. The State of Florida threatened Florida black bear (*Ursus americanus floridanus*), and three reptiles State listed as Species of Special Concern (alligator snapping turtle [*Macroclemys temmincki*], gopher turtle [*Gopherus polyphemus*], and Suwannee cooter [*Pseudemys concinna suwanniensis*]) have been documented along the Withlacoochee River corridor. The bear and gopher turtle are also candidates (C2) for federal listing. The pallid cave crayfish (*Procambarus pallidus*), a State Species of Special Concern, can be found in the aquatic caves of the river (FDNR, 1989). The river habitat is also a concentration area for songbirds and other migrants.

The present Withlacoochee/Upper Suwannee study was partially funded in Fiscal Year 1991 (FY91). At that time, funding was not available for analytical work. Therefore, the decision was made to perform a reconnaissance evaluation of the physical conditions and logistics of the site. A Phase II project proposal was not funded in FY92 as more critical work of the Field Office ranked higher. After evaluating the broader concerns of the entire Suwannee River Basin, staff of the Panama City Field Office have decided that future work associated with the Withlacoochee River will be integrated within a basin-wide contaminants evaluation of the entire Suwannee River drainage. Commencement of a Suwannee River Basin Study is planned for FY94.

THE RECONNAISSANCE INVESTIGATION

The reconnaissance investigation was conducted between September 10 and 13, 1991. The work included site inspection, by vehicle and boat, of the Florida portion of the Withlacoochee River, Jumping Gully Creek, and the Suwannee River above and below the mouth of the Withlacoochee River (Figure 1). We had several objectives when we commenced this investigation. Those objectives were as follows.

A. Evaluate the physical/vegetative nature of the study area:

   1. hydrologic characteristics,
   2. geology and sediment characteristics,
   3. vegetative conditions, and
   4. logistics and accessibility for sampling.

B. Review available site-specific biological and chemical background information about the study area.

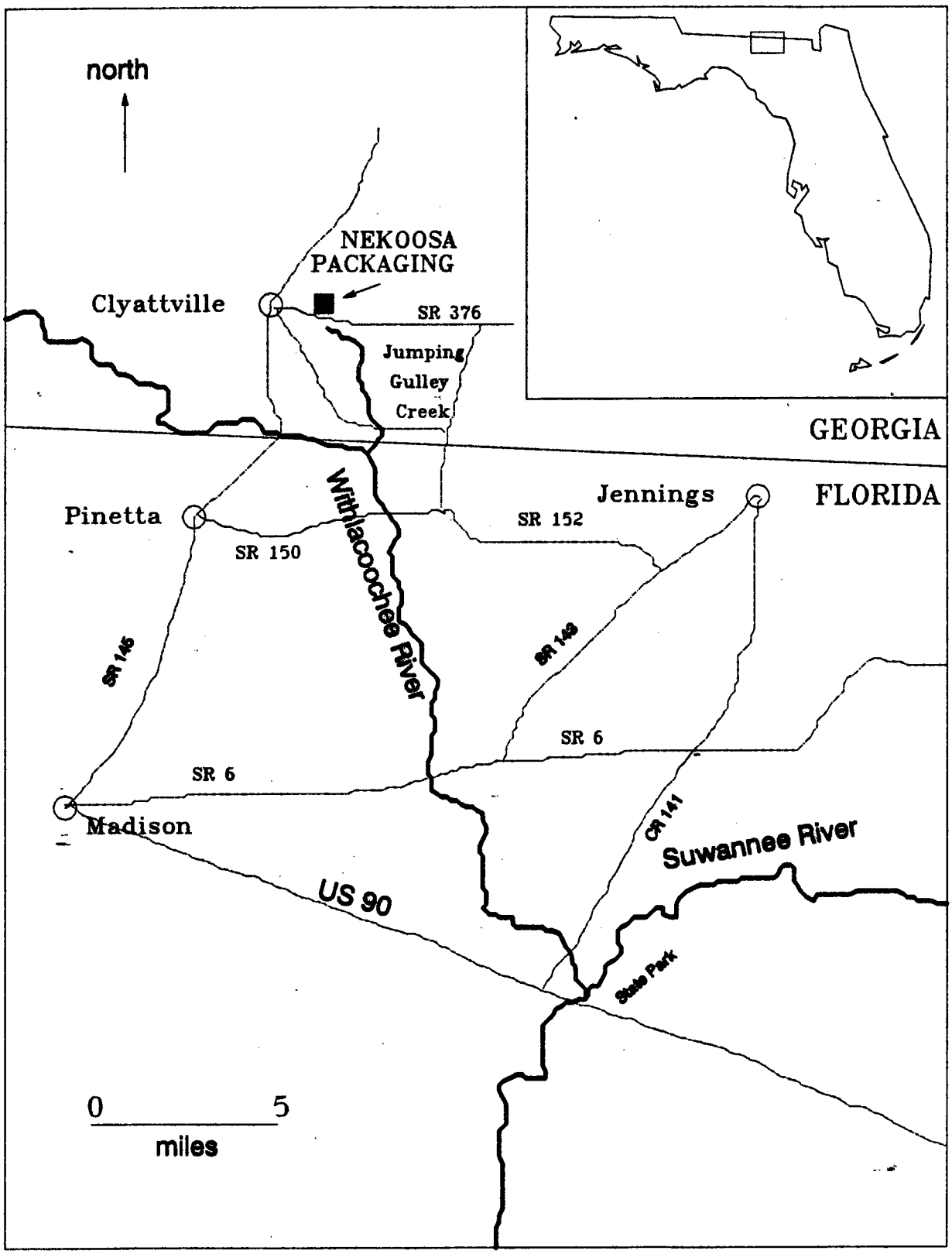

Figure 1. Withlacoochee River Study Area

C. Identify field evaluation alternatives.

ON-SITE OBSERVATIONS

A. Hydrologic Characteristics

Jumping Gully Creek is small (100 to 200 cfs). It lacks clarity because of paper mill effluent and natural tannins from its floodplain. Much of its volume is the result of the contribution of the paper mill (2 to 40%). Jumping Gully Creek originates in Lowndes County, Georgia, and flows approximately seven miles before entering Florida. In Florida, the creek continues about three- quarters of a mile before it empties into the Withlacoochee River. At the head of the creek, just south of State Road 376, Nekoosa Packaging discharges its industrial process waters. According to topographic maps, some portions of the creek enlarge into ponds or have been impounded. These sites were not accessible to us during the reconnaissance investigation because they are on private property.

The Withlacoochee River has a flow of about 1,670 cfs. As mentioned above, it receives significant input from natural springs. There is considerable seasonal variation in flow. Rapid water velocities and even "white water" areas exist in some stretches of the River.

The Suwannee River has a flow of about 6,400 cfs just below the mouth of the Withlacoochee River. Currents are strong and the water is often silt-laden or stained with tannins.

The velocity of all three waterways was greater than we had envisioned. Such velocities significantly reduce the existence of fine sediment depositional areas. Chemical contaminant loading of riverine sediments may take place far from input points. Therefore, impacts to sediments may be far removed from what was at first defined as the "study area."

B. Geology and Sediment Characteristics

Jumping Gully Creek appears to have some potential sediment collections areas. Its much smaller size makes some types of sampling, such as sediment collection, easier. However, accessibility by any boat is probably impossible because of the small size of this creek.

The Withlacoochee River has frequent areas with large limerock formations and other rock outcrops. Many are just barely submerged below the surface. Sediments appear to be mostly large grained and predominantly sandy in nature. Silt/clay depositional areas appear to be rare and are probably seasonal in nature. Spring runoff velocities

may scour most depositional areas annually. Much of the river bank is steep, with little vegetation.

The Suwannee River is much broader and deeper. Velocities are fairly high, and they probably reduce the occurrence of long-term sediment depositional areas. Huge limerock outcrops exist throughout the river. River banks are not as steep as those on the Withlacoochee River, but are often as high.

C. Vegetative Conditions

A dense riparian forest exists along most of Jumping Gully Creek. According to topographic maps, a freshwater marsh system exists along one reach of the creek.

The Withlacoochee River has a narrow, vegetated floodplain because of the river-cut embankments. However, streamside forest and other vegetation along this river provide quality habitat for many trust species, particularly birds. Because of the fairly strong currents and the river's geologic conditions, few aquatic vegetation beds appear to exist.

Vegetative conditions are similar along the Suwannee River section of the study area. Emergent aquatic species are somewhat more abundant in occasional backwater areas. Submerged aquatic vegetation beds are rare in the main river.

D. Logistics, Accessibility and Sampling

Jumping Gully Creek - Access to most of the creek will first require permission from adjacent landowners (primarily Nekoosa Packaging Company). Access may only be possible on foot because of the small size of the creek, the thick vegetation, and potential brush piles and fallen logs. Sediment sampling may be best accomplished in the winter (January or February) during the vegetation defoliation period; and when reduced temperatures make strenuous work easier. Points of access are probably limited to either just south of Georgia State Road 376 (at the Nekoosa point of discharge), or at a second paved road crossing about one mile north of the Florida/Georgia state line. Fish sampling can probably be accomplished with trotlines, small gillnets (in impounded areas) and rod and reel. Electrofishing would only be possible with back-pack equipment.

Withlacoochee River - Adequate boat ramps exist only at the Florida Suwannee River State Park (on the Suwannee River near the mouth of the Withlacoochee) and at a State launching ramp located on the Withlacoochee River approximately six miles above its mouth. This ramp is on the west bank of the River in Madison County (section 33, R 11 E, T 1 N). Steep, high, dirt embankment launching sites that can be used for canoes or small skiffs exist on the north side of the River where Florida State Road 145 crosses over to Georgia State Road 31, and at Florida State Road 6.

In many stretches, because of rocks, swift current, and shallow depth, the river is not navigable; particularly moving upstream. Accessing sites by drifting downstream may be possible using a small skiff with a short shaft outboard or electric trolling motor. Use of even a small electrofishing boat will be limited and probably seasonal. River velocities will probably significantly hamper attempts to use gillnets. Trotline sampling may be possible in some areas.

Suwannee River - Access can be easily achieved by launching a boat at the Suwannee River State Park. Because of the river's hydrology and geology, sediment sampling will be difficult, and could be impossible. Limerock formations hinder the use of some sampling gears. A full-size ponar dredge was lost in a limerock outcrop during an attempt to collect reconnaissance sediment samples from the river. Depositional areas may be miles downriver from the currently defined study area. Therefore, sediment sampling may even be unnecessary in this stretch of the river. Fish collections can be made using trotlines, gillnets, electrofishing or rod and reel.

BACKGROUND BIOLOGICAL AND CHEMICAL REVIEW OF THE STUDY AREA

Most site-specific databases and reports have been read and reviewed. They help provide a foundation of background information from which to plan future investigative actions. They include:

1. a fish population survey (Florida Game and Fresh Water Fish Commission, 1989),

2. a Jumping Gully Creek water quality report (Florida Department of Environmental Regulation, undated),

3. three bioassay reports related to the Nekoosa effluent (Florida Department of Environmental Regulation, 1981, 1985, 1987),

4. and a Withlacoochee River chemical and hydrology report (Suwannee River Water Management District, 1990).

FIELD EVALUATION ALTERNATIVES

In the future, this project will be integrated into the larger, holistic Suwannee River Basin Study. We believe that this is the best approach for total quality resource management. As we view the system as a whole ecological unit, we will evaluate, among other things, all significant point source discharges. We continue to believe that the industrial discharge into Jumping Gully Creek is significant. Impacts related

to that discharge should be evaluated even if those impacts occur at locations remote from the discharge site.

Field evaluation alternatives that should be considered for future work at this geographic component of the Suwannee River Basin Study include:

A. Jumping Gully Creek & Selected Control Site

1. Standard Field Bioassay & Microtox Bioassay
2. Genetic Biodiversity/Cellulose Acetate Electrophoresis
3. Sediment Chemistry/Stream Faunal Bioassessment
4. Fish Necropsy and Histopathology Survey
5. Biota/Tissue Chemical Analysis

B. Withlacoochee River - Above/Below Jumping Gully Creek

1. Trust Species Inventory
2. NPDES Point Source Inventory
3. Land Uses/Non-Point Source Inventory
4. Biota/Tissue Chemical Analysis
5. Fish Tumors/Lesions/Histopathology Survey
6. Microtox Assessment for Point Sources

C. Suwannee River - Above/Below Withlacoochee River Mouth

1. Trust Species Inventory
2. NPDES Point Source Inventory
3. Land Uses/Non-Point Source Inventory
4. Limited Sediment Chemical/Physical Analysis
5. Biota/Tissue Chemical Analysis
6. Fish Tumors/Lesions/Histopathology Survey
7. Microtox Assessment for Point Sources

CONCLUSIONS AND RECOMMENDATIONS

The Withlacoochee/Upper Suwannee River component of the Suwannee River Basin contains valuable habitat utilized by important trust resources, as well as species of special concern to the State of Florida. It is also a point of discharge for a significant industrial activity. Both the resources and evaluation of environmental impacts of this area should be integrated into a well-designed, comprehensive study of the entire river basin.

It is recommended that the information in this progress report be included in determining the design of the Suwannee River Basin study.

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